

223440

SCS ENGINEERS, PC

April 13, 2010
File No. 02201311.07

Mr. Charles Terreni
Chief Clerk and Administrator
Public Service Commission of South Carolina
101 Executive Center Drive, Suite 100
Columbia, South Carolina 29210

Subject: Waiver Agreement, Docket No. 2002-271-G
Ameresco Palmetto, LLC Gas Pipeline
Spartanburg County, South Carolina

COPY
Posted: lod
Dept: S.A.
Date: 4/14/10
Time: 11:25

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2010 APR 14 AM 9:01
SCS PUBLIC SERVICE
COMMISSION

Dear Mr. Terreni:

On behalf of Ameresco Palmetto, LLC, SCS Engineers hereby submits this report to the Public Service Commission of South Carolina in accordance with Docket No. 2002-271-G, Paragraph 2.D. As indicated in Docket No. 2002-271-G, Paragraph 2.D, a section of PE-100 pipe should be removed once every three calendar years from the BMW/Ameresco gas transmission pipeline in order to evaluate for deterioration or other flaws which would compromise the pipe's integrity or hamper its performance. A specimen of pipe was removed in December 2006 and again in December 2009 to satisfy this condition of the Waiver.

In 2009, samples of PE-100 pipe were exhumed by SCS Field Services (a Certificate of Training for the pipe fusion technician is provided in Attachment C). The location where the samples were obtained is illustrated on the attached figure. Four "hot taps" were performed to remove small 3-inch diameter plugs of the pipe material. Each hot tap hole was properly closed and the operation of the pipeline was not interrupted during the sample collection activities.

The following tests were conducted on the section of PE-100 pipe removed from the BMW/Ameresco gas transmission line.

- Visual Analysis and Photography
- Optical Imaging
- Thermal Stability in accordance with ASTM D3350-06, Section 6.3, and
- PENT Testing in accordance with ASTM D3350-06).

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Testing was conducted at an independent laboratory (Jana Laboratories) that specializes in pipe testing. The test section of PE-100 pipe was transported to Jana Laboratories in December 2009. Based on the results of the test, none of the test results indicate substandard, inadequate properties or performance of the samples. The laboratory report is provided in Attachment A. Photographs documenting the hot taps and information about the hot tapping procedure are provided in Attachment B.



Mr. Charles Terreni
April 9, 2010
Page 2

We trust the above testing satisfies the conditions in the Waiver that relate to PE-100 pipe testing. If you have any questions or require further information, please call Steve Lamb at 704-504-3107.

Sincerely,



Steven C. Lamb, PE
Vice President
SCS ENGINEERS



Scott R. Nordgren, PE
Senior Project Professional
SCS ENGINEERS

scl/srn

cc: Vernon Gainey, Office of Regulatory Staff
Ben Heusier, Ameresco Palmetto, LLC

M:\PROJECT FILES\02201311.07 PE100 test 2010\PE 100 Report 2010.doc

ATTACHMENT A



PROJECT 09-1192

FINAL REPORT

Analysis of a 12" DR17 PE 100 Pipe Sample Exhumed After Six Years



April 8, 2010

Executive Summary

The purpose of this project was to evaluate the integrity of an exhumed PE 100 pipe sample that was installed under a waiver six years ago.

Based on the testing performed in this project, none of the test results indicate any obvious deterioration in pipe properties.

The samples provided were characterized by the following tests:

- Visual Analysis and Photography
- Optical Imaging
- Thermal Stability Test
- PENT Test

Based on the samples provided and the testing performed in this project, the pipe sample meets the following requirements:

- Thermal Stability (ASTM D2513-09a, Section 5.13.3)
- PENT (> 1,000 hours)

Report No.: Project 09-1192 – Final Report

P.O. No.: 26033 R1

Client: Ameresco Palmetto, LLC
111 Spleen Street, Suite 410
Framingham, MA 01701
U.S.A.

Date of Issue: April 8, 2010

1.0 Purpose of Test

The purpose of this project was to evaluate the integrity of an exhumed PE 100 pipe sample that was installed under a waiver six years ago.

2.0 Test Item Identification and Description

Samples 09-961 to 09-964, as shown in Table 1, were provided by the Client after extraction from a line of 12" DR17 PE 100 piping, six years after installation. Samples 10-132 and 10-181 are re-molded PENT plaques of the four samples provided (Samples 09-961 to 09-964). No further detail of the samples was provided.

Table 1: Sample Description

Jana Sample ID	Description
09-961	2 ¾" black plug extracted from 12" DR17 PE-100 pipe; Bag marked: APP-01, 12-21-09, 1505
09-962	2 ¾" black plug extracted from 12" DR17 PE-100 pipe; Bag marked: APP-02, 12-21-09, 1540
09-963	2 ¾" black plug extracted from 12" DR17 PE-100 pipe; Bag marked: APP-03, 12-21-09, 1615
09-964	2 ¾" black plug extracted from 12" DR17 PE-100 pipe; Bag marked: APP-04, 12-21-09, 1645
10-132	PENT plaque re-molded using Samples 09-961 to 09-964
10-181	PENT plaque re-molded using Sample 10-132 and Samples 09-961 to 09-964

3.0 Test Methods

The samples were subjected to various tests. Details of the tests are provided below.

3.1 Visual Analysis and Photography

The samples were visually examined as received and photographed. Selected photographs are provided in Appendix A.

3.2 Optical Microscopy

The inner surface of each sample was examined through optical microscopy using an Olympus B061 Optical Microscope at 6.7x magnification. Both the inner and outer surfaces were examined. Test details are provided in Appendix B.

3.3 Thermal Stability Test

Oxidation Induction Temperature (OIT) tests were performed on the bulk material of the re-molded plaque sample in general accordance with ASTM D3350-10 to the requirements of ASTM D2513-09a, Section 5.13.3. The sample was tested in triplicate.

3.4 PENT Test

PENT testing was conducted on the re-molded plaque samples in accordance with ASTM F1473-07. Testing was conducted at 80°C at a stress of 2.4 MPa based on the unnotched area. The plug samples were not re-ground and roll-milled prior to re-molding. Test details are provided in Appendix C.

Testing to ASTM D3350, D2513 and F1473 is covered by Jana's ISO 17025 scope of accreditation (I.A.S. TL-256).

4.0 Test Results

Table 2 provides a summary of the test results. Detailed test results are provided in Appendices A to C.

Table 2: Summary of Test Results

Test	Result	Requirement	Status
Visual Analysis	Drag marks present on the outer surfaces. Scratches on the inner surface with red markings.	N/A	N/A
Optical Imaging	No evidence of any abnormalities found.	N/A	N/A
OIT (°C)	Replicate 1: 269	ASTM D2513-09a: $\geq 220^{\circ}\text{C}$	Pass
	Replicate 2: 265		
	Replicate 3: 266		
PENT at 80°C	Failure Time: > 1,123 h Based on four specimens	> 1,000 h	Pass

N/A: Not Applicable

5.0 Discussion

Based on the visual examination and optical analysis, the samples provided did not exhibit any evidence of abnormalities on the outside and inside surfaces. Drag marks were observed on the outer surface. Scratch marks and red markings were observed on the inner surface. The samples emitted a strong gaseous odor.

The samples meet the requirement of ASTM D2513-09a, Section 5.13.3 for Thermal Stability.

Based on the PENT testing, the samples have a PENT value of greater than 1,000 hours.

6.0 Conclusions

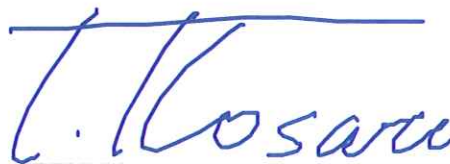
Based on the samples provided and the testing performed in this project, the pipe sample meets the following requirements:

- Thermal Stability (ASTM D2513-09a, Section 5.13.3)
- PENT (> 1,000 hours)

Based on the testing performed in this project, none of the test results indicate any obvious deterioration in pipe properties.

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Issued by



Tony Kosari, M.Sc.
Project Team Leader

Reviewed by



Sarah Chung, M.A.Sc., P.Eng.
Senior Project Leader



This report relates only to the specimen provided and there is no representation or warranty that it applies to similar substances or materials or the bulk of which the specimen is a part. Any comparisons made are valid only for the test conditions specified. This report shall not be reproduced except in its entirety without express written consent from Jana Laboratories Inc. Neither Jana Laboratories Inc. nor any of its employees shall be responsible or held liable for any claims, loss or damages arising in consequence of reliance on this report or any default, error or omission in its preparation or the tests conducted.

Appendix A

Details of Visual Analysis and Photography

Figures A1 to A4 provide the as-received photographs of the samples.

Figure A1: Sample 09-961, As Received (A: Inner Surface, B: Outer Surface)

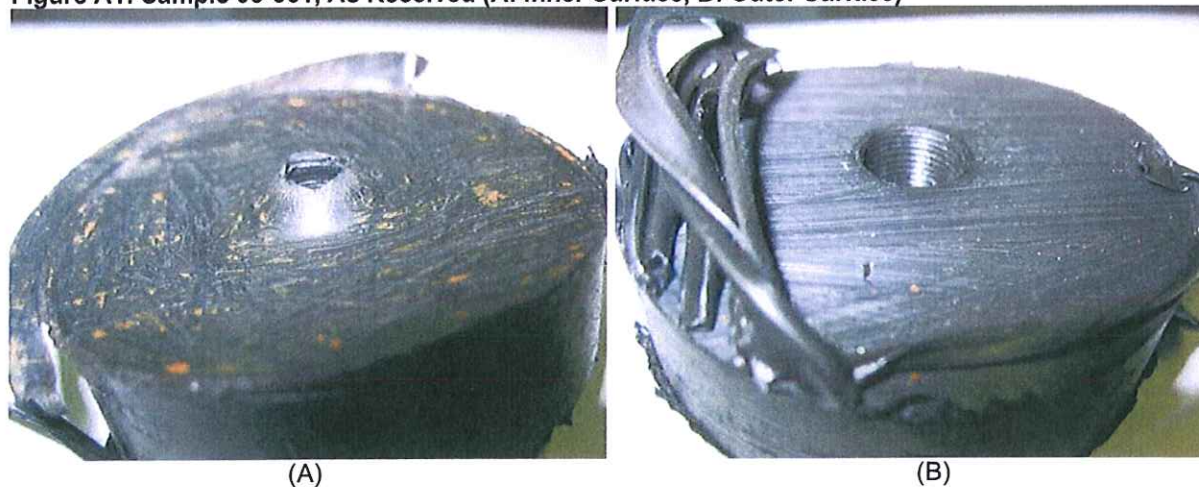


Figure A2: Sample 09-962, As Received (A: Inner Surface, B: Outer Surface)



Figure A3: Sample 09-963, As Received (A: Inner Surface, B: Outer Surface)



Figure A4: Sample 09-964, As Received (A: Inner Surface, B: Outer Surface)



Appendix B

Details of Optical Analysis

Figures B1 to B4 provide the optical photographs of the inside and outside surfaces of the test samples.

Figure B1: Sample 09-961, 6.7x Magnification (A: Inner Surface, B: Outer Surface)

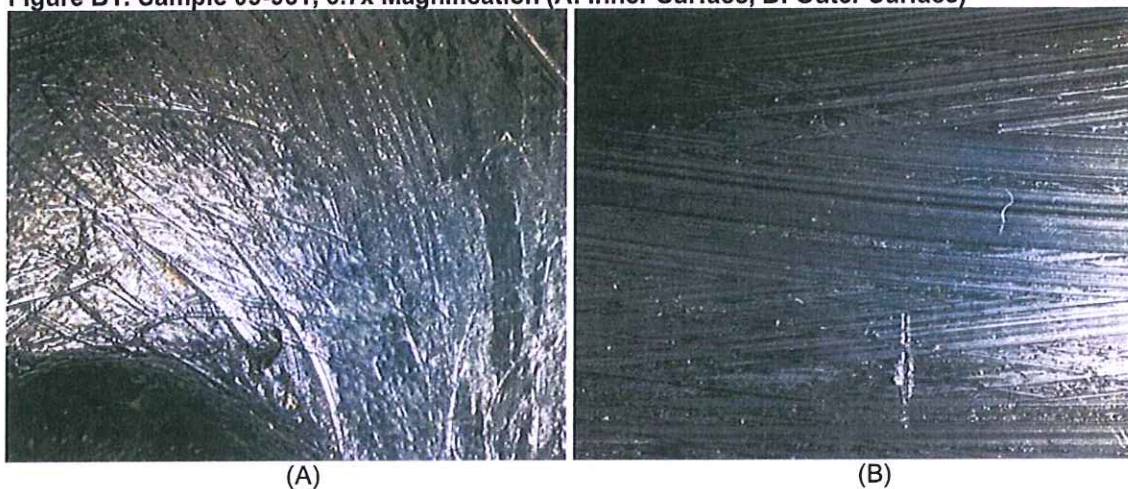


Figure B2: Sample 09-962, 6.7x Magnification (A: Inner Surface, B: Outer Surface)

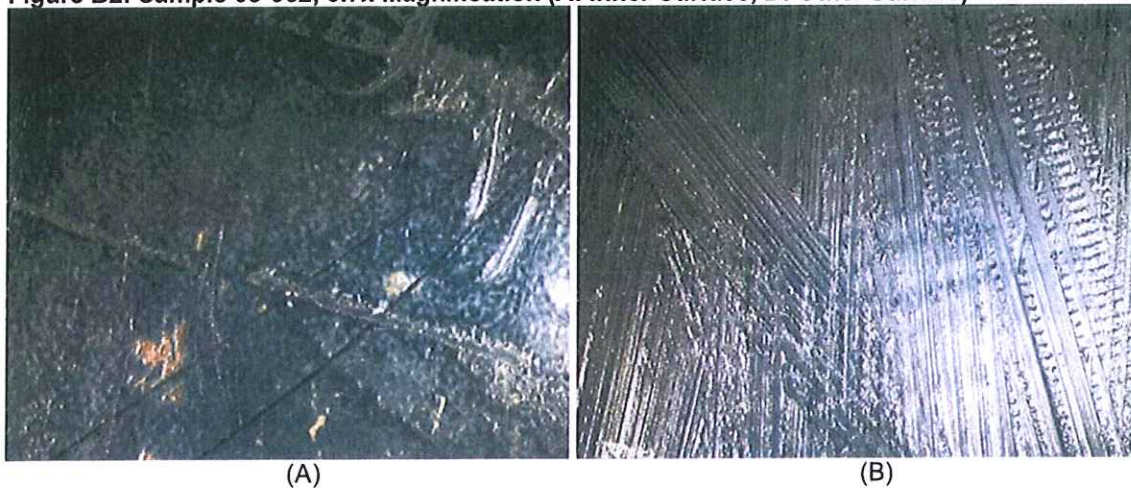


Figure B3: Sample 09-963, 6.7x Magnification (A: Inner Surface, B: Outer Surface)

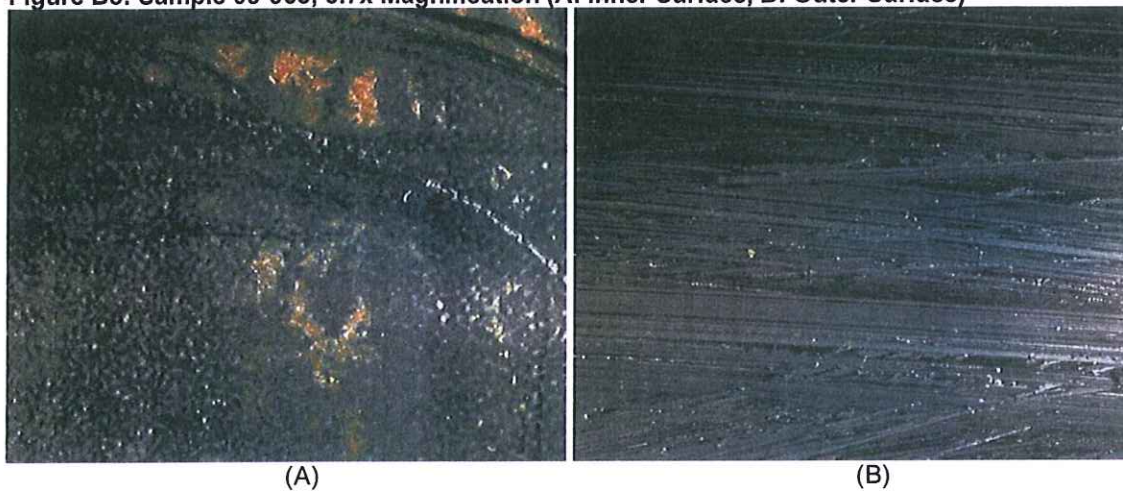
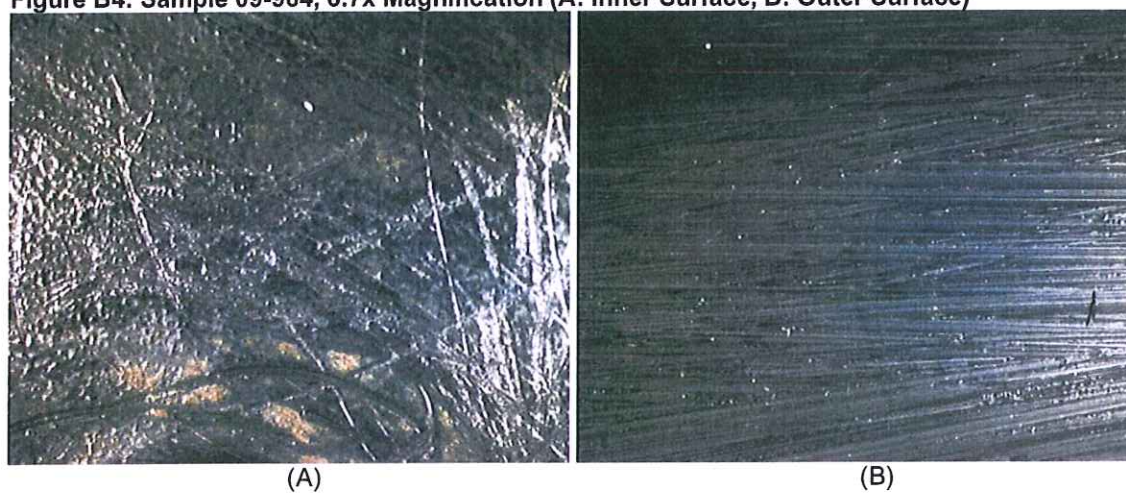


Figure B4: Sample 09-964, 6.7x Magnification (A: Inner Surface, B: Outer Surface)



Appendix C

PENT Test Details

The PENT test details are provided in Tables C1 and C2. PENT specimens machined from plaque Sample 10-132 were assigned Sample ID 10-167. PENT specimens machined from plaque Sample 10-181 were assigned Sample ID 10-182.

Table C1: PENT Test Details for Sample 10-132 (Plaque #1)

Sample ID	10-167
Average Time to Failure (h)	>1,222
Specimen No.	01
Specimen Width (mm)	25.02
Specimen Thickness (mm)	9.99
Test Temperature (°C)	80
Stress (MPa)	2.4
Main Notch Depth (mm)	3.50
Side Groove Depth (mm)	1.00
Calculated Load (N)	600
Status	Non-Failure
Time to Failure (h)	>1,222

Table C2: PENT Test Details for Sample 10-181 (Plaque #2)

Sample ID	10-182		
Average Time to Failure (h)	>1,124		
Specimen No.	01	02	03
Specimen Width (mm)	25.12	25.28	25.00
Specimen Thickness (mm)	9.46	9.93	9.73
Test Temperature (°C)	80	80	80
Stress (MPa)	2.4	2.4	2.4
Main Notch Depth (mm)	3.30*	3.40*	3.30**
Side Groove Depth (mm)	0.90	1.00	0.90
Calculated Load (N)	570	602	584
Status	Non-Failure	Non-Failure	Non-Failure
Time to Failure (h)	>1,123	>1,123	>1,124

* Notch depth is 0.09 mm shallower than required.

** Notch depth is 0.15 mm shallower than required.

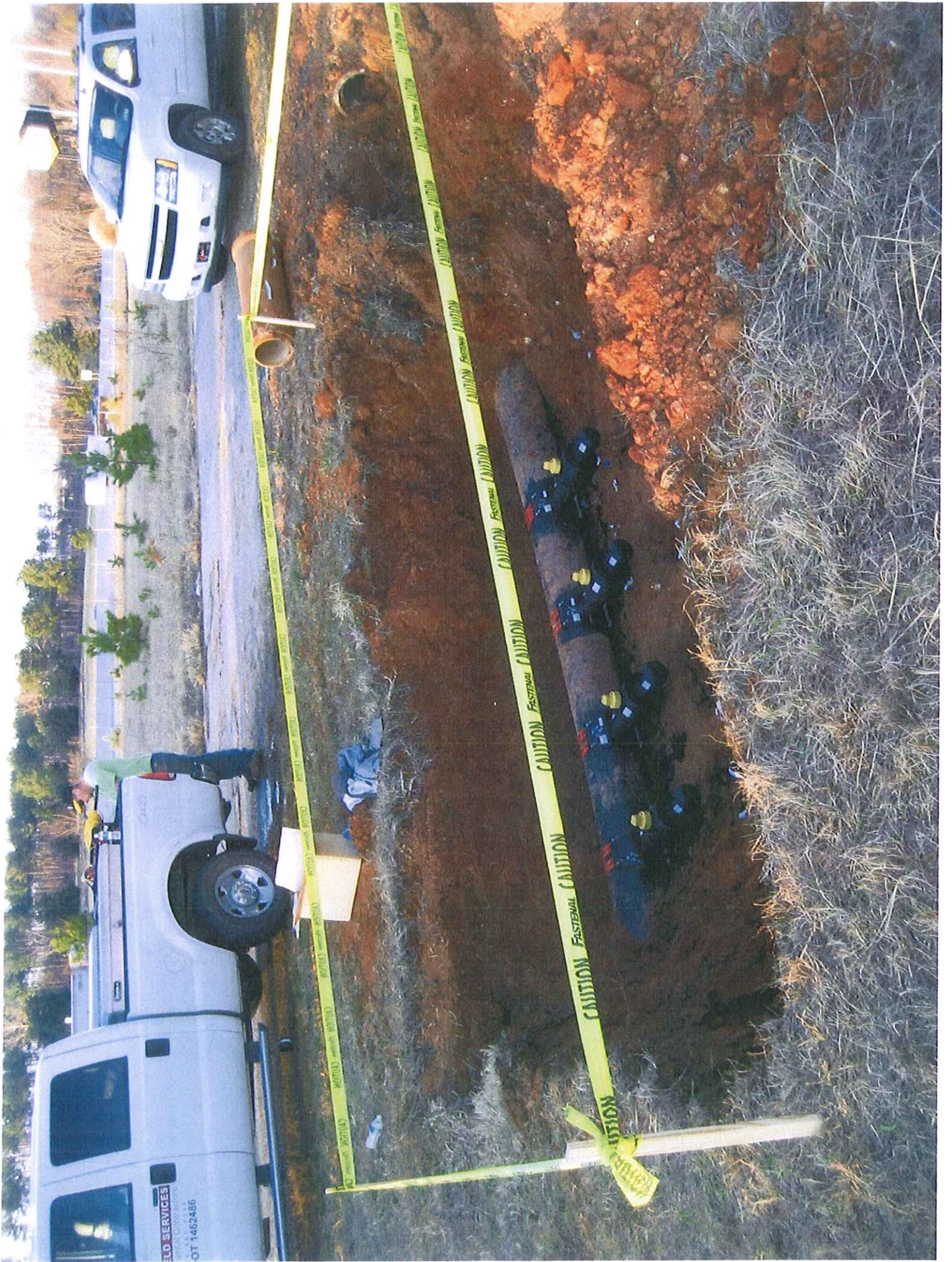
ATTACHMENT B











POLYTAPP SYSTEM



Instruction Manual

PE 32 TAPPING MACHINE
&
POLYTAPP VALVE

M. T. Deason Company, Inc.

P. O. Box 101807
2820 Commerce Boulevard
Birmingham, AL 35210

Phone: (205) 956-2266
Fax: (205) 956-1911

Email: info@mtdeason.com

www.mtdeason.com

INTRODUCTION TO PE 32 TAPPING MACHINE & POLYTAPP VALVE

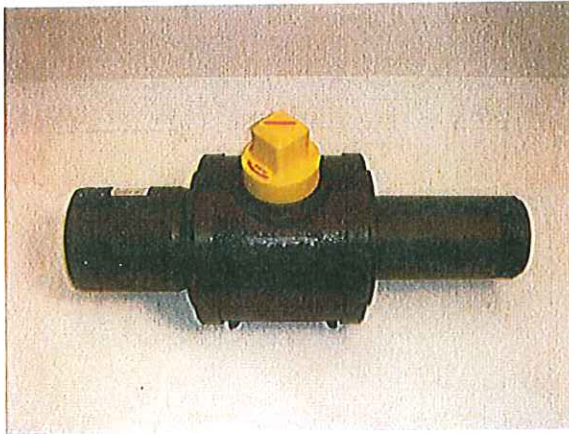
These instructions are designed to provide the operator with factory recommended operations for safe and effective use of the PE 32 Tapping Machine.

This equipment is designed to tap through the MTD POLYTAPP® Valve System. Under no circumstances exceed factory recommended specifications.

Utilize all safety precautions and procedures to ensure operator safety.

MTD recommends that the operator read and become familiar with this entire manual before operating the PE 32 Tapping Machine.

MTD recommends that the operator be trained in accordance with this instruction manual and make test taps with pressure before actual field operations. Prior to use if operator or engineering has any questions concerning the operation of this tapping machine, please contact M. T. Deason Company.



POLYTAPP VALVE



**PE 32 TAPPING MACHINE for 2" – 6" PE Hot
Taps on 2" - 12" Pipe**



PE 32 Tapping Machine with Accessories and Steel Carrying Case

CAUTION: Do not proceed with any tapping operation which will depart from the procedures described in this instruction manual. Any such departure could result in personal injury or property damage.

Any alteration to this tapping machine nullifies and cancels all warranties. Contact MTD for replacement parts or maintenance.

Any alteration of PE 32 Tapping Machine, adapters or accessories may result in personal injury or a machine malfunction.

The PE 32 Tapping Machine is designed to make hot taps on polyethylene pipe through our MTD POLYTAPP® system utilizing the MTD TRI FUSION® Electrofusion Processor. All universal processors can be utilized for fusion with MTD POLYTAPP® System equipped with 4.7 mm leads.

The PE 32 Tapping Machine is equipped with fast feed for advancement of tube and slow feed for cutting.

PE 32 TAPPING MACHINE	
SPECIFICATIONS (Part # TRI1082)	
Description / Function	Size / Rating
MAXIMUM Operating Pressure	250 PSI
Maximum Operating Temperature	115° F
Tap Sizes: Using MTD POLYTAPP® cutters	2", 4", 6" Tap
Feed Rate	
Fast (Body Tube)	1.00" / turn (360° Revolution)
Slow (Tap Depth Indicator)	0.04" / turn (360° Revolution)
Maximum Travel	32"
Machine Weight	43 Lb
Length (extended)	79"

SAFETY

Operator should be familiar with location and function of all safety features built into the PE 32 Tapping Machine and related equipment. Wear protective clothing.

WARNINGS and CAUTIONS

The purpose of **WARNINGS** and **CAUTIONS** in these instructions is to call attention to possible danger of injury to personnel or property damage to equipment and warrants complete attention and understanding.

WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury and damage to equipment.

CAUTION Indicates a potentially hazardous situation which, if not avoided, may result in personal injury and damage to equipment. It may also be used to alert against unsafe practices.

PROTECTIVE CLOTHING

Protective clothing is recommended whenever working around machinery. MTD encourages utilization of hard hat, gauntlet gloves, safety goggles, safety shoes, garments to cover exposed areas of skins, and breathing apparatus when toxic atmosphere exists.

PROPER GROUNDING

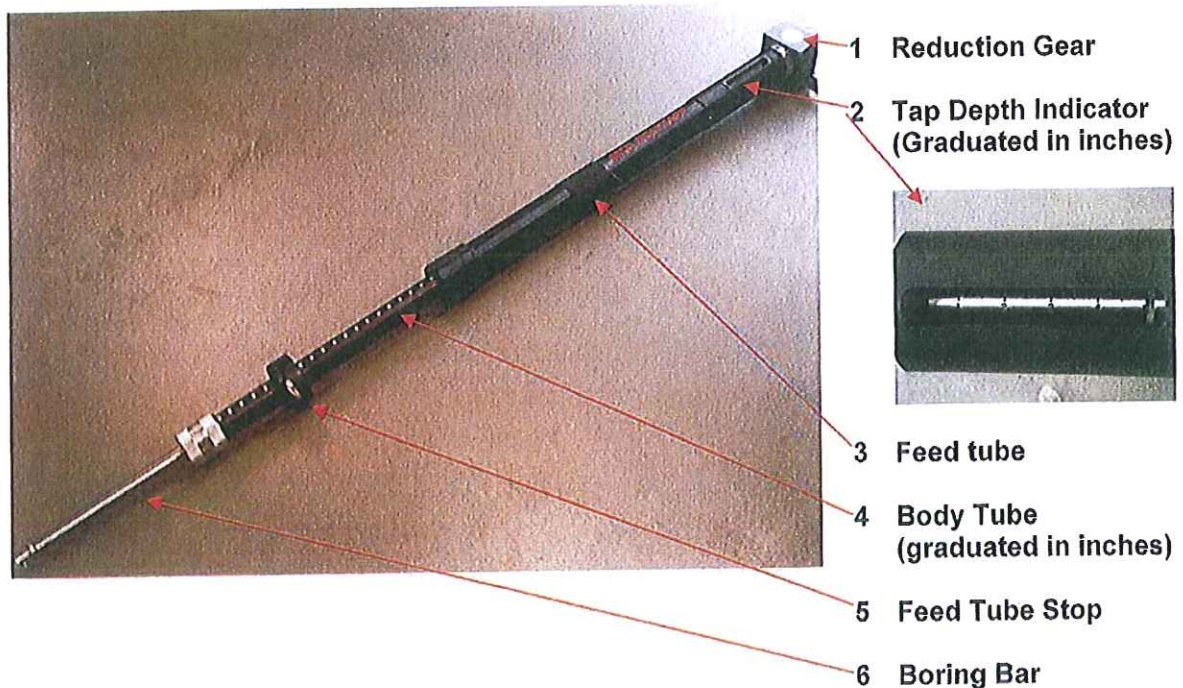
Polyethylene pipe can create an electrostatic charge that may be hazardous to personnel and equipment. Utilize your company's procedures that provide a grounding technique and system to eliminate this hazard.

Many natural gas companies wrap a wet cloth on the outside diameter of the pipe prior to installing the tapping saddle, valve and tapping machine. There are companies that manufacture grounding rods for this type application utilized in the natural gas industry.

POLYETHYLENE PIPE SUPPORTS

Pipe supports utilizing wood or sand bags may be required when tapping mains.

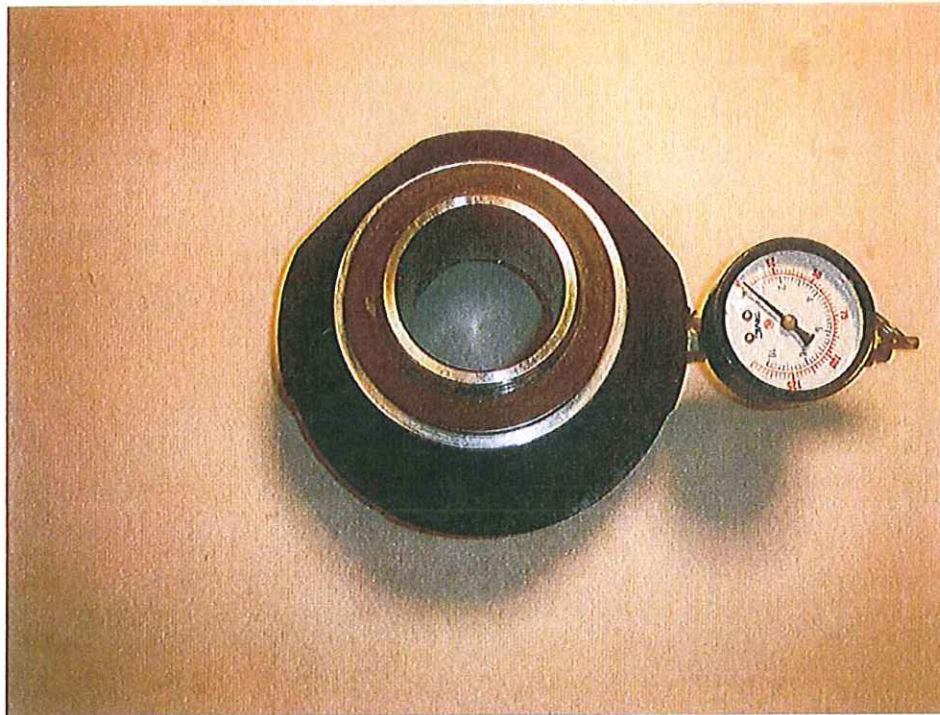
TAPPING MACHINE & COMPONENTS



PE 32 TAPPING MACHINE



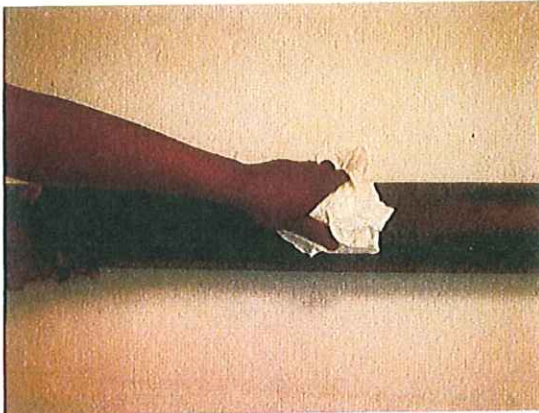
POLYTAPP® HOLDER PILOTS & CUTTERS



POLYTAPP® ADAPTERS WITH GAUGE AND BLEEDER VALVE

An adapter (shown above) is used to connect the PE 32 to the tapping valve. The adapter contains the fitting to connect the bleeder valve. This valve is used to bleed air from the valve and adapter prior to completing the tap, and to bleed off line pressure after the tap is made, the valve closed, and before removing equipment.

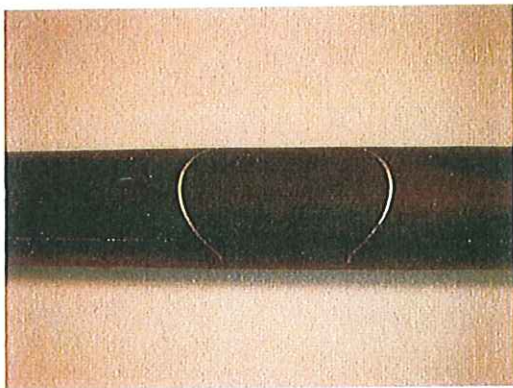
PIPE PREPARATION FOR ELECTROFUSION INSTALLATION OF POLYTAPP VALVE UTILIZING PE 32 TAPPING MACHINE



Clean Pipe with wet cloth to remove dirt and any contaminates

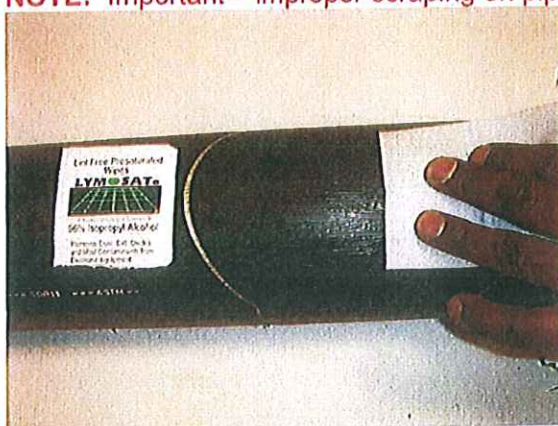


Place MTD TRI FUSION® Saddle on clean area of pipe and mark for scraping



Remove saddle and scrape marked area with hand or rotary scraper removing oxidation and contaminates.

NOTE: Important – improper scraping on pipe will result in fusion failure



After scraping utilize 96% Isopropyl Alcohol Wipes or 96% Isopropyl Alcohol and clean lint free cloth to clean scraped area of pipe.



Clean saddle fusion mat with 96% Isopropyl Alcohol Wipes.

NOTE: Do Not Use Less than 96% Isopropyl Alcohol. Make sure alcohol is dry prior to beginning fusion.



Each Tapping Saddle is equipped with Nylon Straps for installation. Place Nylon Strap around pipe, tighten straps & level saddle.



Make sure that the nuts are tightened until there are no threads exposed in the bottom of the saddle flange. Operator can use mirror to check thread depth. This ensures that the saddle is properly attached to pipe with correct torque and pressure.

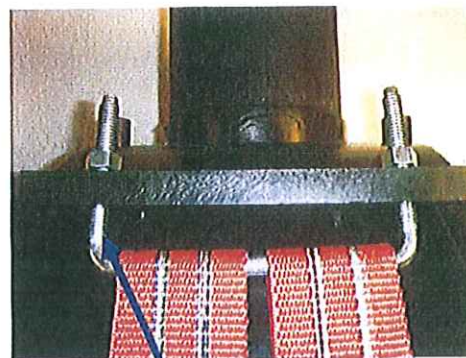


Check bottom flange of saddle for correct torque and make sure no threads are exposed.



Proper Clamping

Note that there are no threads exposed on the bottom of the U-Bolt under the saddle flange.

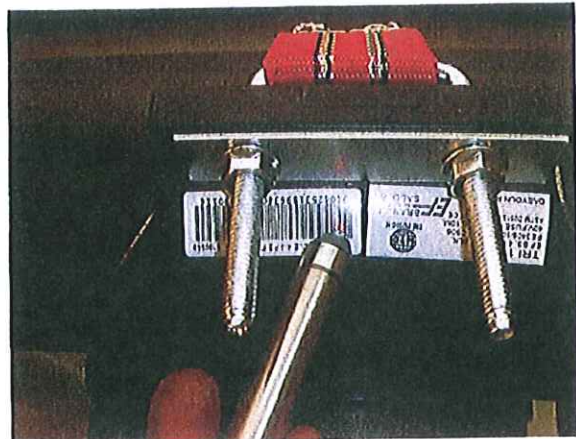


Improper Clamping

Note that threads are exposed on the bottom of the U-Bolt under the saddle flange which will create smoke during fusion and result in fusion failure (leak).



Fuse saddle to pipe. Attach universal processor leads (4.7 mm pins). MTD TRI FUSION® Processor is equipped with universal leads (4.0, 4.7, and 3-pin connection). Adapter pins from 4.0 to 4.7 are available from MTD. Write fusion completion time on saddle with marker.



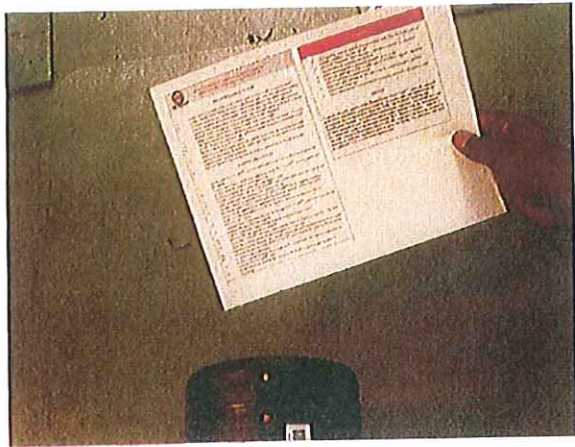
MTD TRI FUSION® Saddles are equipped with a resistor allowing fitting to be fused in automatic mode. Fittings are also equipped with barcode label and can be fused with barcode wand.



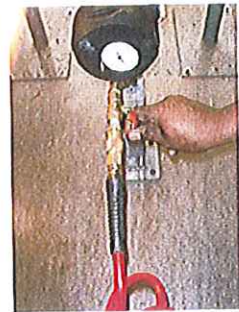
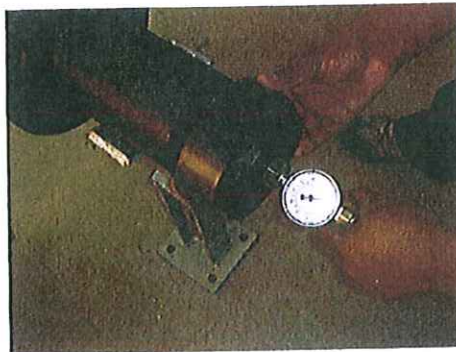
Mark stab depth on MTD TRI FUSION® Saddle utilizing the molded stab indicator EF outlet of the POLYTAPP® Valve on the outside diameter of the coupling.



Scrape outlet of saddle with hand scraper or rotary scraper.



Instructions are packaged with each POLYTAPP® Valve. Operator should read and familiarize himself with proper instructions prior to fusing saddle to pipe and POLYTAPP® Valve to saddle.



Test fusion joints utilizing MTD TRI FUSION® test cap with gauge per your established company standards required for pressure and time.



Perform fusion of POLYTAPP® Valve to saddle allowing required cooling time as listed in instructions. Record fusion completion time by writing on saddle and valve with marker.

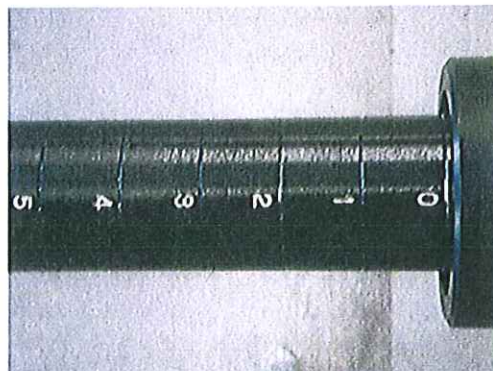
CAUTION: *Electrofusion of fittings should be done only by personnel who are properly trained and qualified in accordance with DOT requirements and have an understanding of these instructions and operating procedures listed in manufacturer's instruction manual.*



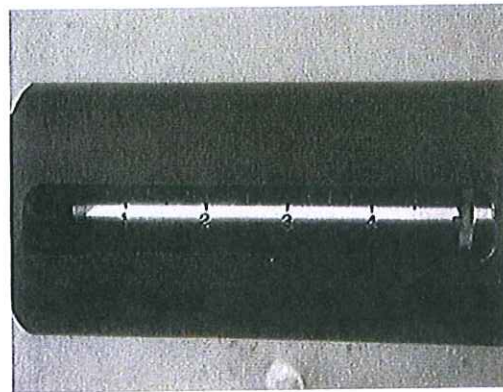
The MTD TRI FUSION® Universal Processor is equipped with an internal printer that immediately displays fusion data for operator. The information provides operator with job location, operator's name or ID number, fitting description, and mode of fusion. Print out provides amps and voltage in 10% increments during fusion process. If correct current is provided for fusion process the print out will state "Fusion Complete" or in the event an incorrect power source is utilized or contamination print out will state "Fusion Failure."

PE 32 TAPPING MACHINE OPERATIONS

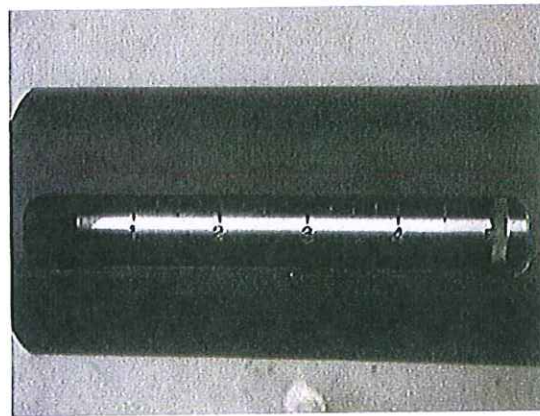
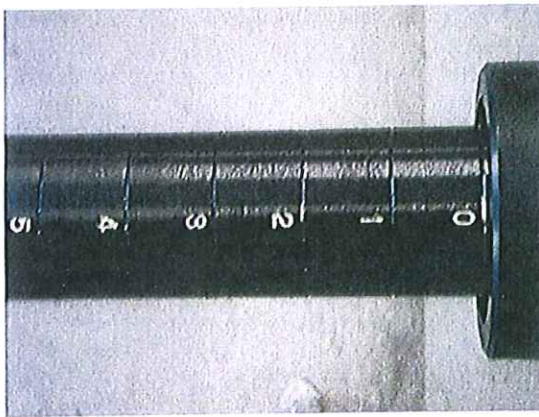
To get a better understanding of how the tapping machine operates, the operator should remove the tapping machine from its case and perform the following tests.



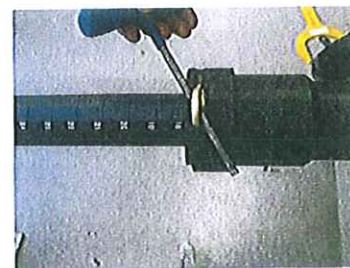
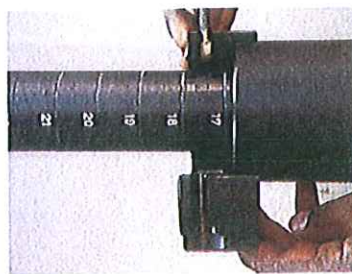
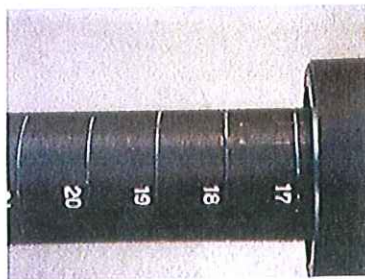
First, make sure feed tube is retracted to "0".



Next, make sure that the tap depth indicator is fully retracted by turning the reduction gear box counter-clockwise (by inserting crank handle into drive nut). The serrated groove at the lower end of the gear box window is "0" inches and the serrated groove at the upper end next to the handle is "5" inches. The tap depth indicator is graduated in $\frac{1}{4}$ " intervals.



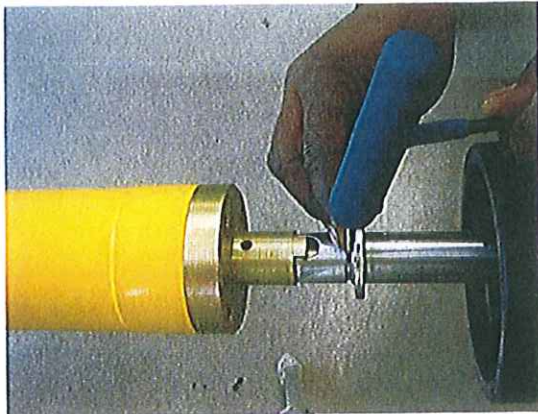
Turning the feed tube clockwise advances the boring bar at a rapid rate (1" per turn).



The Body Tube is graduated in inches 0" - 27". Operator can mark travel depth by setting Feed Tube Stop as shown above.

EXAMPLE: 4" Hot Tap on 4" pipe requires the body tube to be set at $16 \frac{3}{4}$ ". This will advance the pilot tip to touch 4" pipe (See Table on pages 15 & 16)

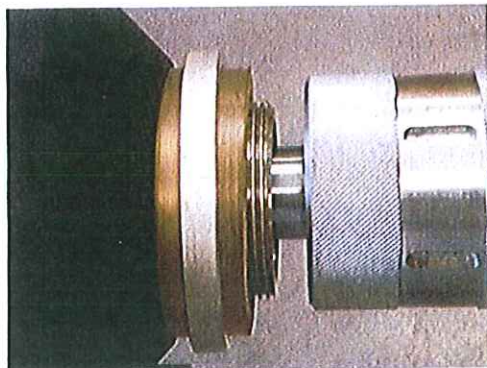
Attach Feed Tube Stop Clamp at $16 \frac{3}{4}$ " (see picture).



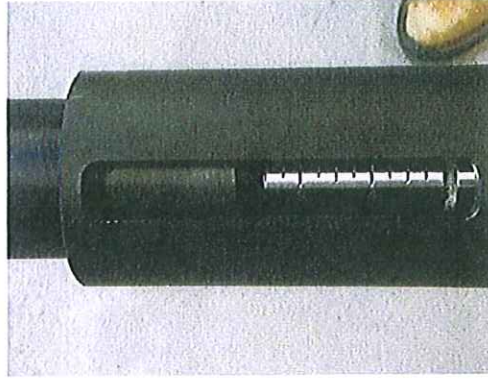
Slide 4" threaded POLYTAPP Valve Adapter with Gauge and Bleeder Valve over the boring bar prior to attaching pilot and cutter.



With tapping machine supported in level position to POLYTAPP valve, thread on adapter. Tighten adapter with POLYTAPP wrench.



Attach tapping machine to valve adapter and tighten with wrench provided.



Check Travel Chart prior to beginning tap making sure that Feed Tube Clamp Stop is set at proper depth and check Tap Depth Indicator measurement.

Insert torque handle into gear box housing and attach angle drive air motor to perform hot tap. Travel on 4" x 4" tap is complete when Tap Depth Indicator reaches 2.50" (See picture above right).

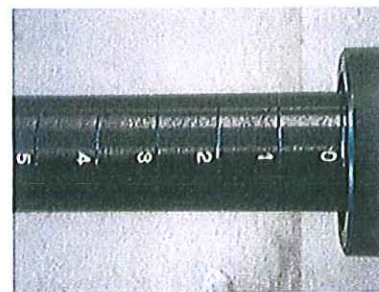
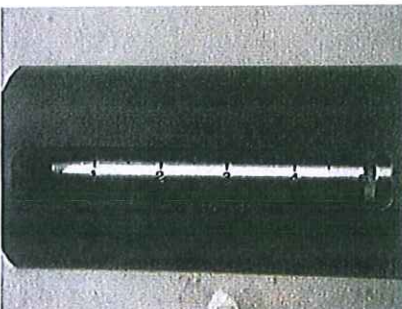
Example: 4" x 4" Tap Maximum Travel 16.75" (Body Tube) + 2.50" (Tap Depth Indicator) = 19.25" to Complete Tap.

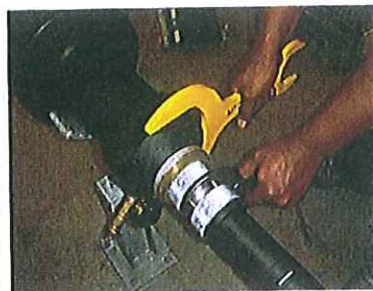
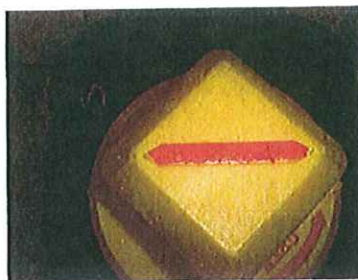
Hot Tap is Complete.



Remove Air Motor and torque handle and insert reverse crank handle into drive nut and turn counter-clockwise until Tap Depth Indicator in window reaches "0".

CAUTION: Do not utilize pneumatic air motor with reverse direction to retract tap depth indicator to "0". This will over torque tap machine and cause damage.





Turn off valve following valve indicator arrow with valve wrench and open bleeder valve on adapter. Make sure pressure on gauge reads "0" before disassembling tapping machine from valve.

WARNING: Vent pressure away from work area and personnel. Stand clear of vent when bleeder valve is opened.

Disassemble tapping machine from POLYTAPP Valve.



Shavings from pilot in pipe



Coupon retained in cutter



Detach pilot holder and pilot from cutter



Remove pilot holder



Coupon and shavings



Turn counter-clockwise and remove coupon



With valve in off position remove threads from outlet of valve with rotary polyethylene pipe cutter. After threads are removed follow manufacturer's instructions for butt fusion or electrofusion to outlet piping. After testing for leaks turn valve to the open position as indicated above.

Hot tap is now complete placing new lateral line in service.

Travel Dimensions

For 2" - 4" – 6" POLYTAPPS ON 2" – 12" PIPE With PE 32 Tapping Machine

PIPE SDR 11 Saddles SDR 11	2"	3"	4"	6"	8"	10"	12"
2 x 2	15.00 1.25/1.75						
2 x 3		15.00 1.50/2.75					
2 x 4			15.00 1.50/3.50				
2 x 6				15.00 1.75/5.00			
2 x 8					15.00 2.00/5.00		
4 x 4			16.75 2.50/3.25				
4 x 6				16.75 3.00/4.75			
4 x 8					16.75 3.00/5.00		
4 x 10						16.75 3.00/5.00	
4 x 12							16.75 3.00/5.00
6 x 6				21.75 4.50/5.00			
6 x 8					21.75 4.50/5.00		
6 x 10						21.75 3.00/5.00	
6 x 12							21.75 4.50/5.00

Body Tube Measurement

Tap Depth Indicator Measurement / **Maximum Travel without damaging back wall of pipe**

Travel Dimensions

For 2" - 4" - 6" POLYTAPPS ON 2" - 12" PIPE With PE 32 Tapping Machine

PIPE SDR 9 Saddles SDR 11	2"	3"	4"	6"	8"	10"	12"
2 x 2	15.00 1.25/1.75						
2 x 3		15.00 1.50/2.75					
2 x 4			15.00 1.50/3.50				
2 x 6				15.00 2.00/5.00			
2 x 8					15.00 2.25/5.00		
4 x 4			16.75 2.50/3.25				
4 x 6				16.75 3.25/4.75			
4 x 8					16.75 3.25/5.00		
4 x 10						16.75 3.25/5.00	
4 x 12							16.75 3.25/5.00
6 x 6				21.75 4.75/5.00			
6 x 8					21.75 4.75/5.00		
6 x 10						21.75 4.75/5.00	
6 x 12							21.75 4.75/5.00

Body Tube Measurement

Tap Depth Indicator Measurement / Maximum Travel without damaging back wall of pipe



POLYTAPP® VALVE.....

PE 100/3408 POLYTAPP® VALVES & ACCESSORIES THREADED END X ELECTROFUSION END

TRI1090 2" POLYTAPP® Valve (Port 1.81 OD)

TRI1100 4" POLYTAPP® Valve (Port 3.54 OD)

TRI1110 6" POLYTAPP® Valve (Port 5.24 OD)

Maximum working pressure: POLYTAPP® Valve Gas 125 PSI / Water 200 PSI



MTD TRI-FUSION

PE 100/3408 ELECTROFUSION BRANCH SADDLE

TRI1155 3 X 2 IPS

TRI1160 4 X 2 IPS

TRI1165 4 X 4

TRI1170 6 X 2 IPS

TRI1175 6 X 4

TRI1176 6 X 6

TRI1178 8 X 2 IPS

TRI1180 8 X 4

TRI1185 8 X 6

TRI1190 10 X 4

TRI1195 10 X 6

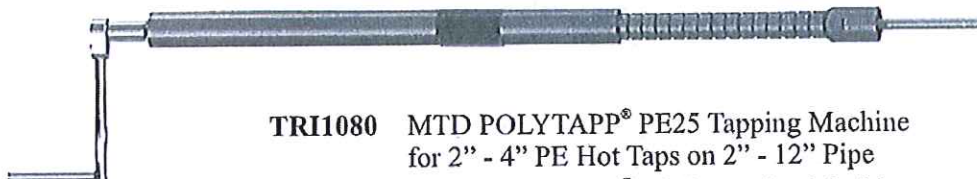
TRI1200 12 X 4

TRI1205 12 X 6

Maximum working pressure: 125 PSI/Outlet SDR11

MTD TAPPING MACHINE

WITH POLYTAPP® ACCESSORIES



TRI1080 MTD POLYTAPP® PE25 Tapping Machine
for 2" - 4" PE Hot Taps on 2" - 12" Pipe

TRI1082 MTD POLYTAPP® PE32 Tapping Machine
for 2" - 6" PE Hot Taps on 2" - 12" Pipe



TRI1092 2" POLYTAPP® Cutter Pilot

TRI1102 4" POLYTAPP® Cutter Pilot

TRI1112 6" POLYTAPP® Cutter Pilot



TRI1094 2" (1.50" OD) POLYTAPP® Cutter

TRI1104 4" (3.147" OD) POLYTAPP® Cutter

TRI1114 6" (4.860" OD) POLYTAPP® Cutter



TRI1096 2" POLYTAPP® P.E. Adapter for Tapping Machine

TRI1106 4" POLYTAPP® P.E. Adapter for Tapping Machine

TRI1116 6" POLYTAPP® P.E. Adapter for Tapping Machine



TRI1107 4" POLYTAPP® Test Cap with Gauge

TRI1117 6" POLYTAPP® Test Cap with Gauge

M. T. Deason Company, Inc.

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e-mail: pipe@leesupply.com • www.leesupply.com

December 16, 2009
SCS Field Services
11260 Roger Bacon Drive
Suite # 300
Reston, VA 20190-5282

To whom it may concern:

I am writing in regard to the fusion qualification of SCS Field Services personnel conducted by Lee Supply Co., Inc. The individual has successfully completed training in proper procedures, and parameters of Butt Fusion, Electrofusion in both small and large diameter polyethylene applications including Saddle Fusion as outlined by the Plastic Pipe Institute (PPI) and Title 49 of The Code of Federal Regulations 192.2985. With this participation and training of proper techniques, and an extensive background with polyethylene applications, SCS Field Services, Mr. Larry Taylor is qualified in Butt Fusion, Electrofusion, and Saddle Fusion in both large and small polyethylene (PE) diameters. Please advise if I may be of further assistance.

Sincerely,

Shawn Lee
Lee Supply Co., Inc.
Fusion Division Manager

ATTACHMENT C



DIVERSIFIED PIPE & PUMP SYSTEMS
INDUSTRIAL - MINING - ENVIRONMENTAL PRODUCTS

Certificate of Training PE Plastic Fusion Joining

Technician: LARRY TAYLOR SS: _____

Address: SCS FIELD SERVICES 11260 ROGER BACON DRIVE

City: RESTON State: VA Zip: 20190

Material Fused: Small Dia. 4" and Below PE 3408
Large Dia. 6" and Above PE 3408

Equipment: McElroy Butt Fusion

Lee Supply Company, Inc., verifies that the above has successfully completed training and qualification in Butt Fusion Procedures as outlined by the Plastic Pipe Institute TR33 and Title 49 of the Code of Federal Regulations 192.285.

Date Issued: 12-16-09 Expires: 12-16-10

KEITH WILLEY
Qualifying Technician


Shawn Lee
Manager, Fusion Services